Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
County of Genesee, New York	)	WT Docket No. 02-55
	)	Mediation No. TAM-43102
and	)	
	)	
Nextel Communications, Inc.	)	
	)	
Petition for Waiver of the Commission's Rules To Allow Genesee to Continue to Operate with 5 kHz Deviation Following Reconfiguration	)	

To: Marlene H. Dortch
Attention: Public Safety and Homeland Security Bureau

PETITION FOR TEMPORARY WAIVER

Nextel Communications, Inc. ("Nextel") a wholly owned subsidiary of Sprint Nextel Corporation, pursuant to Section 1.925 of the Commission's rules, 47 C.F.R. § 1.925, hereby requests temporary waiver of Section 90.210 of the Commission's rules, 47 C.F.R. § 90.210, to allow the County of Genesee, New York ("Genesee" or the "County") to continue to operate its mobile and portable radios with 5 kHz deviation on the new NPSPAC band following reconfiguration.[1] For the reasons provided below, a temporary waiver of the Commission's rules would be appropriate in this instance and would serve the public interest.

I. INTRODUCTION AND BACKGROUND.

Under the terms of the Commission's orders addressing licensee responsibilities for 800 MHz reconfiguration, Nextel is required to negotiate a Frequency Reconfiguration Agreement ("FRA") with each 800 MHz licensee subject to reconfiguration. On September 9, 2011, the

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[1] No waiver of Section 90.213 of the Commission's rules, 47 C.F.R. § 90.213, which addresses frequency stability, is requested or necessary.

Public Safety and Homeland Security Bureau released a Memorandum Opinion and Order resolving a dispute referred to the Bureau for *de novo* review following mediation between Genesee and Nextel.[2]

Since that time, the parties have attempted to negotiate the terms of an FRA implementing the Bureau's order, including in conferences with Commission staff and staff of the 800 MHz Transition Administrator (the "TA"). There are some rather unique challenges faced by Genesee's current operations and proximity to the Canadian border that make a straightforward move to new frequencies an impractical solution. Genesee's system operates in an area near the Canadian border in RPC Region 55, where relatively few United States primary channels for non-NPSPAC operation are available. Because of the shortage of available replacement frequencies in the non-NPSPAC portion of the revised 800 MHz bandplan, the TA originally requested that Genesee reband "in place" – that is, to remain on the County's original channels[3] and reduce its transmitter deviation.[4] However, Genesee maintains two of its channels for use of encrypted "FRED" – a no longer supported Motorola modulation scheme used to improve coverage of encrypted channels in a simulcast network. Genesee claimed that reducing the deviation of Genesee's subscriber units able to handle these encrypted communications to

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[2] *County of Genesee, New York and Sprint Nextel Corp.*, Memorandum Opinion and Order, 26 FCC Rcd 12772 (PSHSB 2011).

[3] Under this proposal, one of Genesee's channels was to be replaced with a different channel. However, that replacement channel is in the NPSPAC portion of the band, and thus also subject to reduced deviation.

[4] The Commission's rules specify an "emission mask" to which the transmitter output waveform must conform. Because channels are more closely spaced in the NPSPAC band than in the remainder of the 800 MHz band, the emission mask requirements for operation in the NPSPAC band are more stringent than in the non-NPSPAC portion of the band, thus requiring a reduction in deviation to stay within the emission mask. *See* 47 C.F.R. § 90.210.

comply with the new NPSPAC band emissions mask would inhibit Genesee's ability to continue to operate using FRED. While the Recommended Resolution of the TA Mediator suggested that mitigation of performance loss be further investigated, the TA Mediator and the Bureau in the first instance directed that Genesee relocate its two FRED channels into the upper portion of the 800 MHz band, to avoid the need to adjust the deviation on the FRED channels to conform with the tighter emissions mask in the new NPSPAC band. Since the Bureau Order, facts have come to light that make this anticipated move impractical, including a transmit power limitation on the proposed channels and a limitation on the ability of the Motorola radio software to support operation above 864 MHz and operation with 4 kHz deviation on the new NPSPAC channels on the same system.

Thus, as a result of joint review of Genesee's options with Commission staff and TA technical staff and Nextel, the most straightforward option is for Genesee to reband certain of its FRED channels in place. To avoid having to deal with potentially contentious mitigation options for continued FRED operation, radios would need to operate with a 5 kHz deviation on Genesee's trunked radio system, rather than the 4 kHz deviation ordinarily required for operation in the new NPSPAC band. Genesee's repeaters would operate at 4 kHz deviation, consistent with the rules for operation in the NPSPAC band. While, after investigation, there appears to be no disagreement that such an approach would be feasible, appropriate and an efficient methodology for achieving reconfiguration, this approach requires a limited, temporary waiver of the Commission's rules.

Nextel believes that the parties are in agreement that such a waiver would resolve the outstanding issues and allow Genesee to proceed with its reconfiguration. The County stated that it was unwilling to pursue this waiver on its own behalf, but expressed no objection to Nextel seeking such a waiver. Accordingly, Nextel respectfully requests that Genesee be granted a temporary waiver of the Commission's rules to allow Genesee to reband in place and allow

radios to continue to operate, while on its system, at 5 kHz deviation until such time as Genesee ceases to utilize FRED in its operations. In particular, Nextel requests this waiver for Genesee's operations shown in the table below.

Call Sign – WPQF924	
Licensed Transmit Frequency (MHz)	**Notes**
806.2875	Currently licensed on 806.0125
806.4625	
806.9125	
807.3625	
807.8125	
807.9875	
808.0375	

II. WAIVER OF THE COMMISSION'S RULES IS WARRANTED

Under Section 1.925 of the Commission's rules, 47 C.F.R. § 1.925, the Commission may grant a request for waiver if it is shown that: (1) the underlying purpose of the rule(s) would not be served or would be frustrated by the application to the instant case, and that a grant of the requested waiver would be in the public interest; or (2) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. Waiver of the Commission's rules is appropriate where "particular facts would make strict compliance inconsistent with the public interest." *AT&T Wireless Services, Inc. v. FCC*, 270 F.3d 959, 965 (D.C. Cir. 2001), citing *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990). The Commission may waive its rules for "good cause" if "special circumstances warrant a deviation from the general rule and such deviation will serve the public

interest." *Northeast Cellular*, 897 F.2d at 1166. In this case, strict application of the rule would be contrary to the public interest due to unusual factual circumstances, and a waiver would serve the public interest by allowing Genesee to move forward expeditiously with the reconfiguration of its 800 MHz radio system.[5]

A. A Waiver Will Remove Remaining Obstacles to Genesee's Reconfiguration

While Genesee has previously advanced reasons why the County believes a waiver and rebanding in place will not provide the County with comparable facilities, Nextel believes those concerns have been fully addressed. In particular, Motorola has confirmed that operating under a waiver would not preclude "flashing" Genesee's radios with new firmware and would not limit interoperability.

Genesee's other expressed concern was with the means to ensure future coordination of NPSPAC frequencies in Region 55. The channels adjacent to Genesee's are currently unlicensed, and there is no present shortage of NPSPAC channels that can be assigned, with no effect from the waiver.[6] However, Genesee's technical consultant, Pericle Communications, has studied the issue along with TA technical experts and with Nextel and has published the results of this study, which is attached to this waiver submission as Exhibit 1. The report describes a standards-based methodology for coordinating adjacent channels while Genesee is operating under waiver. The methodology was designed to allow Region 55 to continue to use existing

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[5] The circumstances surrounding this waiver request are highly unusual – Genesee is one of the few Canadian border licensees with which Nextel has yet to execute an FRA, and the only licensee of which Nextel is aware that has this issue with FRED operations.

[6] The waiver requested herein would only have a potential coordination effect on channels immediately adjacent (± 12.5 kHz) to Genesee's channels. Because two of Genesee's channels are 50 kHz apart, with a national mutual aid channel between them, those two channels only have one 12.5 kHz adjacent channel each. In other words, there are fewer adjacent channels than would ordinarily be expected – and none of the adjacent channels have licensed operations.

techniques to the greatest extent possible, while minimizing the effect on spectrum utilization. The methodology does this by providing a modified contour to be used for adjacent channel interference analysis, depending on the technology being deployed in channels adjacent to Genesee's.

Contour plots attached to the report demonstrate that a temporary waiver of radio deviation rules to accommodate Genesee's FRED operations will not materially affect the ability of licensees in the region to coordinate adjacent channels. Thus, a limited, temporary waiver that allows Genesee to reband certain of its channels in place, including its FRED channels, creates no adjacent channel coordination issue for other licensees in Region 55.

Accordingly, there appears to be no dispute that granting the temporary radio-only waiver requested herein will remove the remaining obstacles to the reconfiguration of Genesee's system and allow reconfiguration to move forward. Grant of the requested waiver would thus serve the public interest by allowing Genesee to move forward expeditiously with the reconfiguration of its 800 MHz system.

B. The Required Waiver is Temporary and Limited in Scope

The scope of the waiver Nextel requests for Genesee is extremely limited – Nextel simply requests such waiver or authority as is required to allow subscriber units, both mobiles (including any consolettes or control stations) and portables, to operate on Genesee's system in the new NPSPAC band with 5 kHz deviation, as opposed to the 4 kHz deviation that would otherwise be required by the normal emission mask for the NPSPAC band. The request does not include a waiver of deviation levels for Genesee's site transmitters, which will comply with the 4 kHz requirements of the new NPSPAC band.

Further, the County will only require a temporary waiver. As described above, the only reason that a waiver is necessary involves Genesee's use of two encrypted channels using the FRED system. Reducing the deviation of Genesee's subscriber units to comply with the

NPSPAC emissions mask could inhibit Genesee's ability to continue to operate using FRED without employing mitigation techniques. Thus, while Genesee requires a waiver to allow it to continue to operate with 5 kHz deviation – preserving the ability to operate with FRED – this waiver will only be necessary for such time as Genesee continues to use FRED.[7] That is, when Genesee makes a decision to cease FRED operations, it will no longer need to operate its radios with greater deviation than otherwise provided for in the Commission's rules, and it will no longer require a waiver. At that point, Genesee's bandplan can be updated, and its radios can operate at 4 kHz.

III. CONCLUSION

In order for Genesee to reband in place, the County requires a waiver of the Commission's rules to allow Genesee to continue to operate without reducing deviation. The necessary waiver is extremely limited in scope, will be temporary, and will serve the public interest by allowing the expeditious reconfiguration of Genesee's system. The waiver has no effect on Genesee's existing spectral neighbors in Region 55, and little, if any, effect on any future neighbors. For the foregoing reasons, Nextel respectfully requests that the Commission grant the temporary waiver requested herein.

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[7] Motorola no longer supports the FRED operations mode.

Respectfully Submitted

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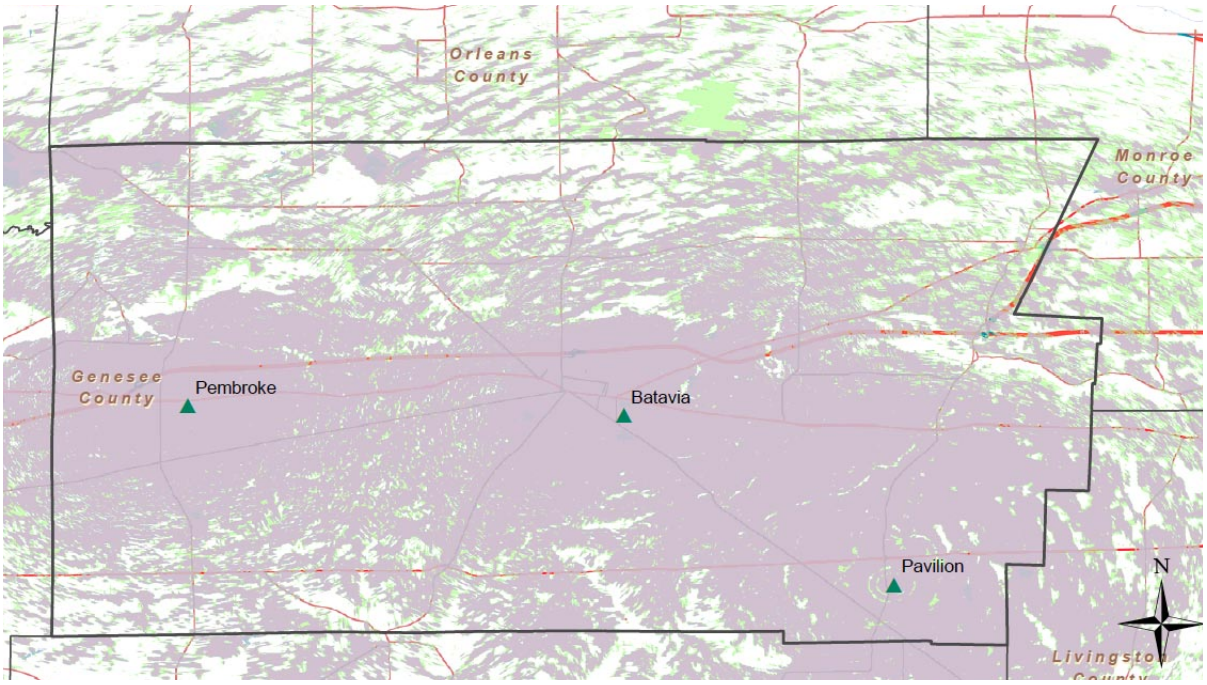
August 7, 2012

EXHIBIT 1

Genesee County Post Rebanding Recommended Adjacent Channel Coordination Procedure



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Genesee County Post Rebanding Recommended Adjacent Channel Coordination Procedure

1.0 Purpose

The principal option under consideration for rebanding the Genesee County 800 MHz trunked radio system is "Option 1 - Reband in Place with Waiver," a plan with the following elements:

- Outbound path operation is NPSPAC-compliant on both analog voice and FRED calls. I.e., analog voice calls operate with +/- 4 kHz maximum deviation and FRED calls operate unchanged (already NPSPAC-compliant).

- Inbound operation on both analog voice and FRED calls continues to be wideband which requires an FCC waiver.[1]

The rationale for pursuing this option is explained in other documents and will not be repeated here. In an effort to determine the feasibility of Option 1, the FCC asked the parties to investigate the effect of continued wide deviation operation (+/- 5 kHz maximum) on the adjacent channel frequency coordination process. Adjacent channel coordination (defined here as 12.5 kHz spaced) is expected to be affected by wide deviation inbound operation because the occupied bandwidth of Genesee mobile transmissions will be greater than other NPSPAC-band users and because Genesee infrastructure receivers will operate with a wider receive filter than other NPSPAC-band infrastructure receivers. Thus, the problem has two parts: (1) operation of Genesee mobile users near neighbor system repeater or auxiliary receiver sites, and (2) operation of neighbor system mobile users near Genesee repeater or auxiliary receiver sites.

At the time of this writing, all twelve channels adjacent to Genesee's six trunked channels are unoccupied [9]. The procedure proposed in this report will be useful if and when applications for these channels are submitted prior to Genesee County adopting a new 800 MHz trunked radio system (which will presumably be capable of operating in with NPSPAC-compliant deviations with no performance degradation.)

The purpose of this report is to characterize the problem and propose a solution that is practical to implement by the Region 55 Radio Planning Committee. The recommended plan implements a procedure described in Section 5.7 of TIA-TSB-88.1-C.

2.0 Description of the TSB-88.1-C Procedure

The TSB-88 procedure is described in Section 5.7 of TIA-TSB-88.1-C [4]. Essentially, the procedure is as follows:

[1]All but one of Genesee's channels are not occupied by current NPSPAC users and for these channels, Genesee can theoretically "reband in place," keeping its original channel but reducing deviation. The one channel that cannot be rebanded in place is the first 8TAC interoperability channel, 851.0125/806.0125 MHz (formerly called the ICALL channel).

Step 1 - Obtain the calculated Adjacent Channel Power Ratio (ACPR) for each adjacent channel transmitter (from Annex A of TSB-88.1-C) within 297 km of the proposed station and +/- 25 kHz of the channel being coordinated. The calculated ACPR value is based on the receiver characteristics of the victim receiver, the specific interferer's modulation and the frequency stabilities of the mobile radio and the infrastructure radio. For example, the ACPR for a NPSPAC receiver (12.6 kHz ENBW) affected by a NPSPAC analog FM transmitter (14 kHz emission bandwidth) is 24.83 dB (from Table A-8, assuming zero frequency error).

Step 2 - If the receive filter Equivalent Noise Bandwidth (ENBW) is not known (the usual case), start with the nominal value provided in Annex A of TSB-88 and adjust this value to accommodate imperfect frequency stability in the following way (see Section 5.7 of TSB-88.1-C):

In the 800 MHz NPSPAC band, the FCC infrastructure transmitter (base station) frequency stability requirement is 1.0 part per million (ppm) and the mobile transmitter frequency stability requirement is 1.5 ppm (see Table 17 in TSB-88.1-C).

Use a standard deviation of 0.4 times the the individual FCC stability requirement in Hz. The independent standard deviations for fixed station and mobile are the following:

$$\sigma_f = 0.4 \text{ x } 1.0 \text{ x } 809 = 323.6 \text{ Hz}$$
$$\sigma_m = 0.4 \text{ x } 1.5 \text{ x } 809 = 485.4 \text{ Hz},$$

and the combined standard deviation is the square root of the sum of the squares,

$$\sigma_c = \sqrt{(324)^2 + (485)^2} = 583 \text{ Hz}.$$

For a 95% confidence factor, the corresponding value of Z_α is 1.645 and the Frequency Stability Adjustment (FSA) is 1.645 x 583 = 959.4 Hz. Twice this value, or 1920 Hz, should be added to the nominal filter ENBW. Use this adjusted ENBW in Step 1.

Step 3 - For adjacent channels, modify the value of the interference contour using the results of Step 1 and Step 2.[2] If the Region specifies a particular interference contour level for a particular interferer and victim technology, adjust this contour level proportionally for the new interferer and victim technology.

In Region 55, a 25 dBu adjacent channel interference contour is specified for analog FM (AFM) NPSPAC interference into NPSPAC receivers. What changes with Option 1 is the ACPR is lower due to the wider deviation of the Genesee mobile transmitter and the wider IF bandwidth of the Genesee infrastructure receiver. The net effect is to push the interference contour out,

[2]The propagation model used to predict these contour levels is partly within the discretion of the Regional Planning Committee. A common model is the F(50,10) broadcast model from Part 73 of the FCC rules. The TSB-88 recommended model would also be appropriate.

thereby increasing the minimum separation distance between adjacent channel stations.

We should note that frequency coordination procedures are almost always applied to the outbound path with an implicit assumption that the inbound path is protected proportionally. We are making this same assumption.

3.0 Recommended Parameters to Be Used for Coordination

Using the TSB-88 approach described above, the ACPR was calculated for three cases: (1) Genesee mobile transmitter interference into neighbor system, neighbor mobile transmitter into Genesee system, and FRED (SECURENET) into a neighbor system. The results are shown in Table 1.

Table 1 - ACPR for Genesee Adjacent Channels, Inbound Path
(See Annex A of TSB-88, Receive Filter = Butterworth 4 pole, 3 stages)

Parameter	Analog FM (AFM)		FRED	Units
	Genesee Mobile Transmitter	Neighbor Mobile Transmitter	Genesee Mobile Transmitter	
Theoretical Receiver ENBW	12.6	16.0	12.6	kHz
ACPR before frequency stability adjustment	19.94	14.36	17.66	dB
Frequency stability adjustment (95 percentile)	1,920	1,920	1,920	Hz
Adjusted ENBW	14.5	17.9	14.5	kHz
Adjusted ACPR (A)	14.75	10.38	13.12	dB
NPSPAC to NPSPAC ACPR (for comparison) (B)	18.36	18.36	18.36	dB
Effect of Option 1 on interference contour (B-A)	**3.6**	**8.0**	**5.3**	**dB**

Note from Table 1 that the worst case condition is interference into the Genesee system from a analog FM NPSPAC user. The current Region 55 plan specifies a 25 dBu interference contour for adjacent channel (12.5 kHz) coordination. The recommended approach is to apply different interference contour levels to the special case of channels adjacent to Genesee County. From Table 2 below, we see that the proper contour level depends on the technology of the proposed new system with P25 Phase I requiring a 20 dBu contour and NPSPAC AFM requiring a 17 dBu contour.

Table 2 - Contours for Genesee Adjacent Channels, Inbound Path
(See Annex A of TSB-88, Receive Filter = Butterworth 4 pole, 3 stages)

Parameter	NPSPAC AFM into NPSPAC AFM	P25 Phase I into Genesee Wide	NPSPAC AFM into Genesee Wide	Units
Theoretical Receiver ENBW	16.0	16.0	16.0	kHz
ACPR before frequency stability adjustment	14.36	14.36	14.36	dB
Frequency stability adjustment (95 percentile)	1,920	1,920	1,920	Hz
Adjusted ENBW	17.9	17.9	17.9	kHz
Adjusted ACPR (A)	18.36	13.26	10.38	dB
NPSPAC to NPSPAC ACPR (for comparison) (B)	18.36	18.36	18.36	dB
Effect of Option 1 on interference contour (B-A)	**0.0**	**5.1**	**8.0**	dB
Interference Contour	**25**	**20**	**17**	**dBu**

Plots of 25, 20 and 17 dBu interference contours for the three Genesee County repeater sites are found in the Appendix to this report. These plots were provided by Transition Administrator.

Note that Table 2 assumes that interference into the Genesee system is worst case. This is true for AFM and P25 Phase I (within 0.14 dB). It is not necessarily true for other technologies. Consequently, both cases, interference into Genesee and interference into the neighbor system, must be considered whenever a new technology is coordinated and the case with the lowest ACPR should govern when computing the new interference contour. The steps are these: For each case, calculate ACPR (for the Genesee mobile transmitter case, use the FRED/SECURENET modulation and not analog FM, as it will always be worse). Take the difference between the minimum ACPR and 18.4 dB and apply that difference to the 25 dBu contour.

4.0 Cited References & Bibliography

[1] W.C. Jakes, ed., Microwave Mobile Communications, IEEE Press Reissue, 1994.

[2] S. M. Ross, A First Course in Probability, New York: MacMillan, 1984.

[3] G.C. Hess, Land-Mobile Radio System Engineering, Artech House, 1993.

[4] TIA TSB-88.1-C, TSB-88.3-C, "Wireless Communications Systems — Performance in Noise and Interference-Limited Situations, Recommended Methods for Technology-Independent Modeling, Simulation and Verification," February, 2008.

[5] R&O, FCC 04-168, "Improving Public Safety Communications in the 800 MHz Band, Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, etc." (WT Docket No. 02-55), Released August 6, 2004.

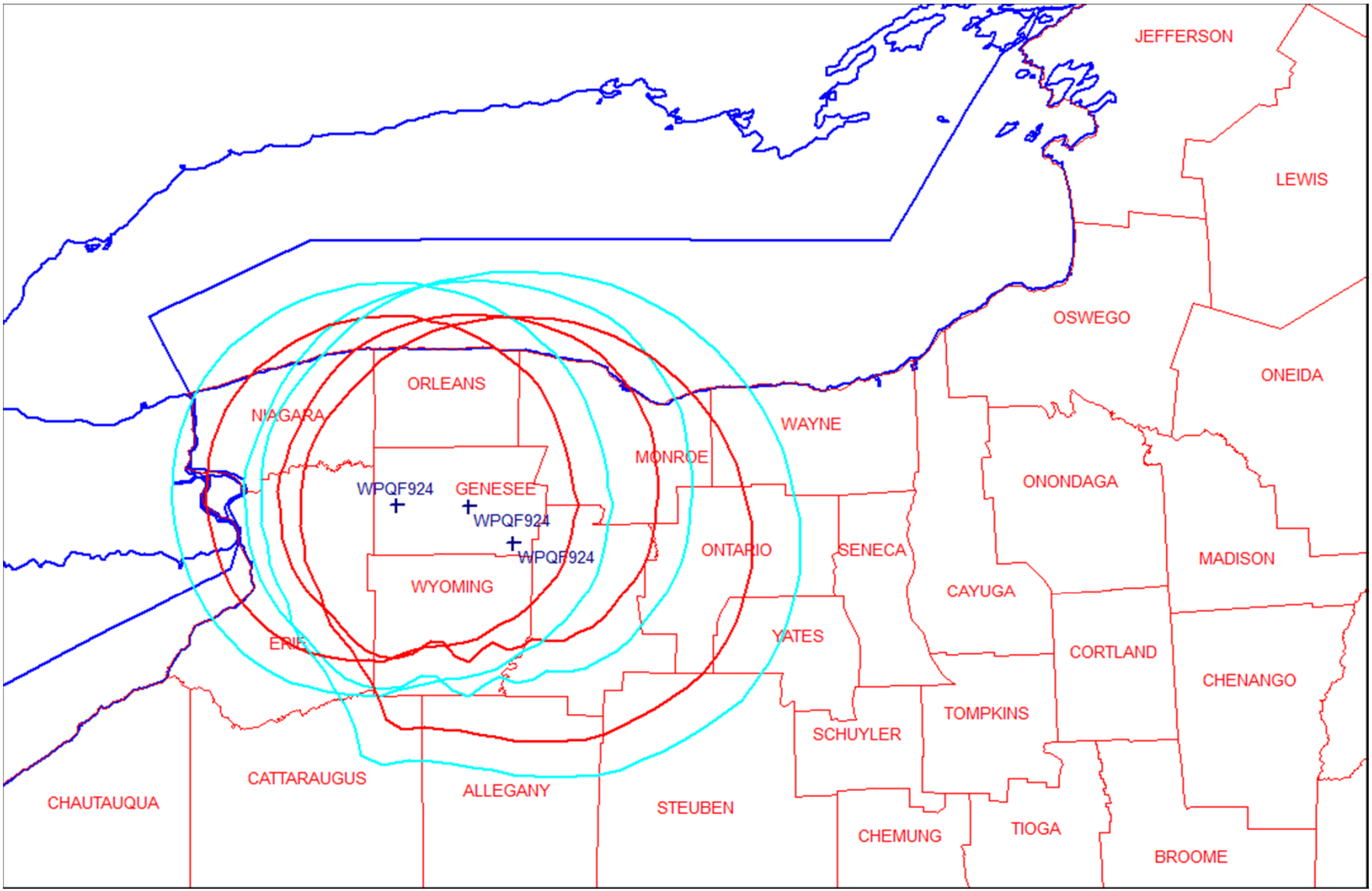
[6] J. M. Jacobsmeyer, "Effect of Reduced FM Deviation on Land Mobile Radio Coverage — Genesee County, NY," January 31, 2011.

[7] Memorandum Opinion and Order, In the Matter of the County of Genesee, New York and Sprint Nextel Corp., September 9, 2011, WT Docket No. 02-55, DA 11-1521.

[8] Regional Plan - The Western New York Radio Planning Committee (FCC Region 55), 12/3/1991.

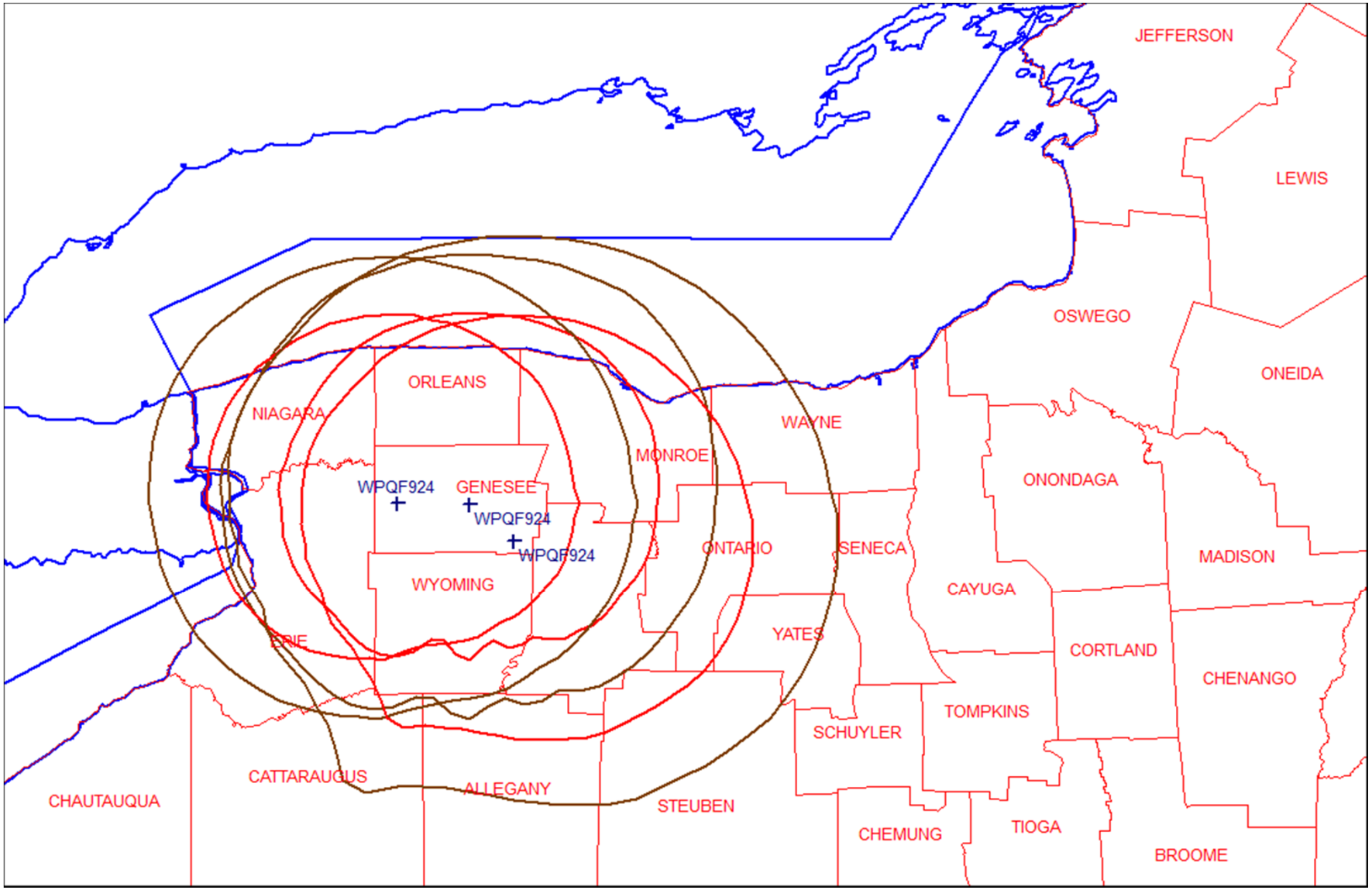
[9] Transition Administrator, Region 55 NPSPAC Frequency Allocation (Excel Spreadsheet).

Appendix - Genesee F(50,10) Adjacent Channel Interference Contours



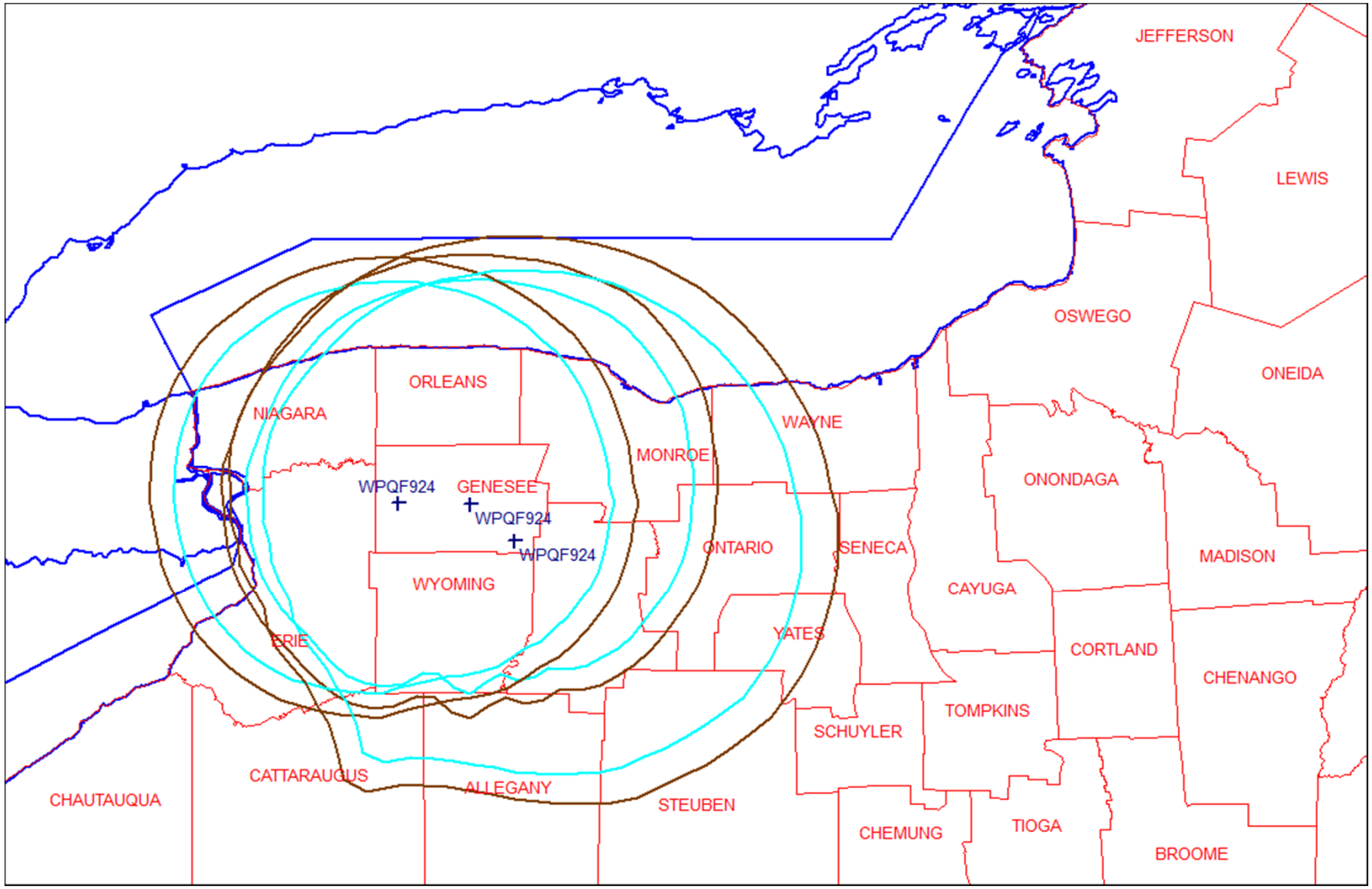
Genesee 25 dBu interference contour: NPSPAC into NPSPAC, Inbound Path

Genesee 20 dBu interference contour: P25 into Genesee Wide, Inbound Path



Genesee 25 dBu interference contour: NPSPAC into NPSPAC, Inbound Path

Genesee 17 dBu interference contour: NPSPAC into Genesee Wide, Inbound Path



Genesee 20 dBu interference contour: P25 into Genesee Wide, Inbound Path

Genesee 17 dBu interference contour: NPSPAC into Genesee Wide, Inbound Path